

REMARKS

In the final office action mailed on January 23, 2008, claims 25, 27, 28, 30, 31, 33 – 39 and 44 – 46 were rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,190,609 (to Lin et al.) in view of U.S. Patent No. 5,824,398 (to Shih) and further in view of U.S. Patent No. 6,248,427 (to Ast) and U.S. Patent No. 5,747,192 (to Hughen et al.) and claims 25, 27, 28, 30, 33 – 43 and 45 and 46 were rejected under 35 U.S.C. §103(a) over Ast in view of Shih and further in view of Hughen et al.

In response to the applicant's prior argument, the final office action states that:

Applicant's argument is based on that Shih teaches onset shrinkage temperature of 64 degree or less {sic}, which is lower than the claimed onset shrinkage temperature. This argument is not persuasive because the shrink film of Shih is stable below its onset temperature, and the onset temperature of Shih is lower than at least 75 degree C, thus the shrink film of Shih is stable below the at least 75 degree C. Thus claims 25, 27, 28, 30, 31 and 33 – 43 stand rejected.

Final Office Action, page 6.

Claim 25 is amended herein to state, in part, that the polymeric film *has* an onset shrinkage temperature of at least about 75°C, rather than stating that the film is dimensionally stable at a temperature below at least about 75°C.

As was explained during the interview conducted on May 23, 2007, after a label is applied to a battery, the label may undergo secondary shrinkage, for example, when subjected to elevated temperatures during storage, shipment or in use. Onset shrinkage temperatures are the temperatures at which films *begin* to shrink in excess of a threshold of about 2% while in an unrestrained state (as defined in applicants' specification at page 4, line 1, and page 5, lines 1-2). In the normal course of events, batteries in shipping containers in transit to packaging facilities can be exposed to onset shrinkage temperatures on the order of 74°C (165°F), and batteries in

flashlights mounted on vehicle dashboards are regularly exposed to onset shrinkage temperatures on the order to 60°C (140°F). When exposed to such elevated temperatures, conventional battery labels are known to undergo secondary shrinkage. Secondary shrinkage may cause seam openings, with resulting exposure of adhesive, and the lifting of the label edges that overlap the ends of the battery.

Also, reduced label thickness is desirable as it permits a reduction in material costs, while also allowing the diameter of the battery casing (and its internal volume) to be maximized for a given batter outer diameter. Further, the stiffness of a label should be high enough to accommodate efficient separation from the release liner at high labeling speeds, yet low enough to resist any tendency of the label to spring back and lift off of the battery casing. Shrinkage in a first direction allows the label to be tightly applied to the battery casing without resulting wrinkles, whereas growth in the second direction avoids the lifting of the label edges that overlap the ends of the battery.

Regarding Lin et al., it was pointed out during the interview of May 23, 2007 by Mr. Phillip Emery that the disclosed shrinkage temperatures of 204-250°F *were not onset shrinkage temperatures*, but rather were much higher temperatures at which Lin et al.'s polypropylene film could be expected to shrink by about 20%. This is shown in Lin et al.'s Figure 6 and described at col. 4, lines 49-56. Lin et al.'s onset shrinkage temperature is far lower, as shown in Figure 6, and as evidenced by the shrinkage of Lin et al.'s film when adhered to a substrate (as opposed to being unrestrained) and exposed to temperatures of 160°F (71°C) (Lin et al., col. 3, lines 58-68) and col. 4, lines 1-14). As explained by Mr. Emery during the interview, the claimed onset shrinkage temperature of 75°C of the present invention is significantly and advantageously higher than that taught by Lin et al. As also explained by Mr. Emery, in order to minimize shrinking and

seam separation at Lin et al.’s lower onset shrinkage temperature, the Lin et al. label must be anchored with a high performance adhesive, a disclosed example being Aroset 1860-2-45. Again according to Mr. Emery, although Lin et al. does not disclose stiffness values, because of the use of a high performance adhesive, the stiffness of the Lin et al. polypropylene film is likely to be well above the range of the present invention as defined by claim 25. Further, Lin et al. fails to disclose or suggest shrinkage in one direction accompanied by growth in another direction.

The Ast and Hughen references both lack any disclosure or suggestion of applicants’ relatively high onset shrinkage temperature of 75 °C, or applicants’ optimum stiffness range of 1 to 20 grams, as claimed in claim 25. Shih’s objective is to provide heat shrinkable films with substantially lower onset shrinkage temperatures at or below 60 °C (Shih, col.1, line 47 and col.6, lines 14 – 16). Thus, if Shih’s teachings were to be combined with those of Lin et al. or Ast, as the examiner suggests, the resulting labels would undergo shrinkage at temperatures well below applicants’ claimed threshold of about 75 °C.

The label of the present invention, as defined by independent claim 25, incorporates a combination of critical characteristics essential to the provision of an ideal battery label. These include a relatively high onset shrinkage temperature of 75 °C, a minimum thickness of between about 0.01 to 0.5mm, an optimal stiffness in one direction of between about 1 to 20 grams, and shrinkage only in a first direction accompanied by growth in a second direction when heated to temperatures above the onset shrinkage temperature. None of the cited references discloses or suggests applicants’ high onset shrinkage temperature. Moreover, the cited references, either when taken singly or in combination, fail to disclose applicants’ unique combination of critical characteristics.

Applicants submit, therefore, that claim 25 is in condition for allowance. Each of claims 27, 28, 30, 32 and 33 – 46 depends directly or indirectly from claim 25 and further limits the subject matter thereof. Each of claims 25, 27, 28, 30, 32 and 33 – 36 is therefore submitted to be in condition for allowance.

Favorable action consistent with the above is respectfully requested.

Respectfully submitted,



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